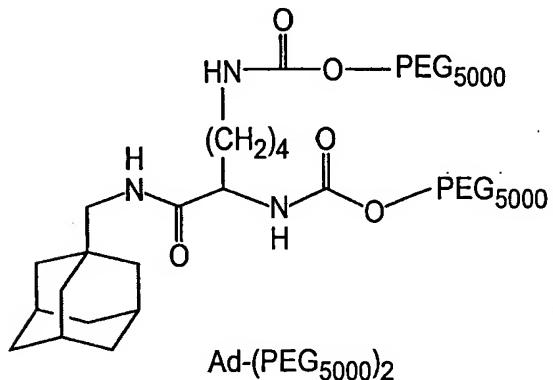
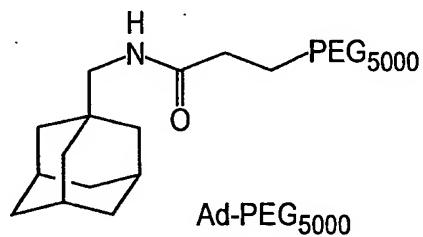
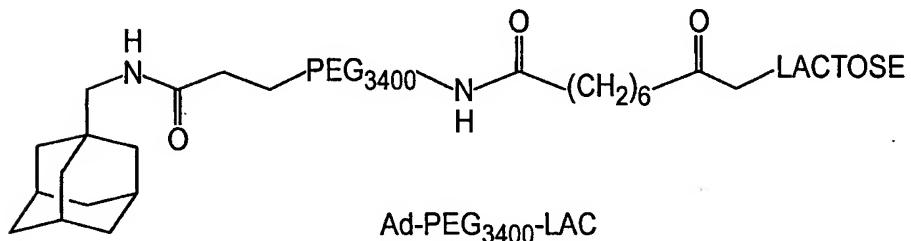
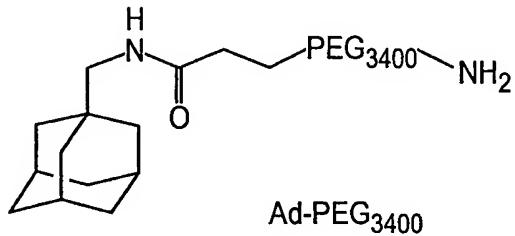


STRUCTURES OF VARIOUS ADAMANTANE-PEG MOLECULES.

**FIG. 1**

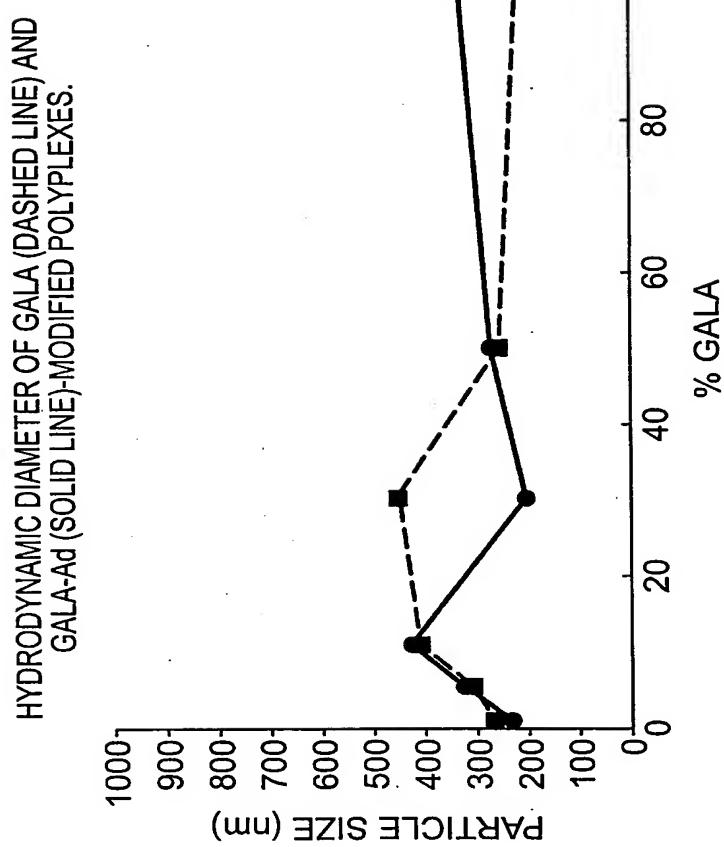


FIG. 2

ZETA POTENTIAL OF GALA (DASHED LINE) AND
GALA-Ad (SOLID LINE)-MODIFIED POLYPLEXES.

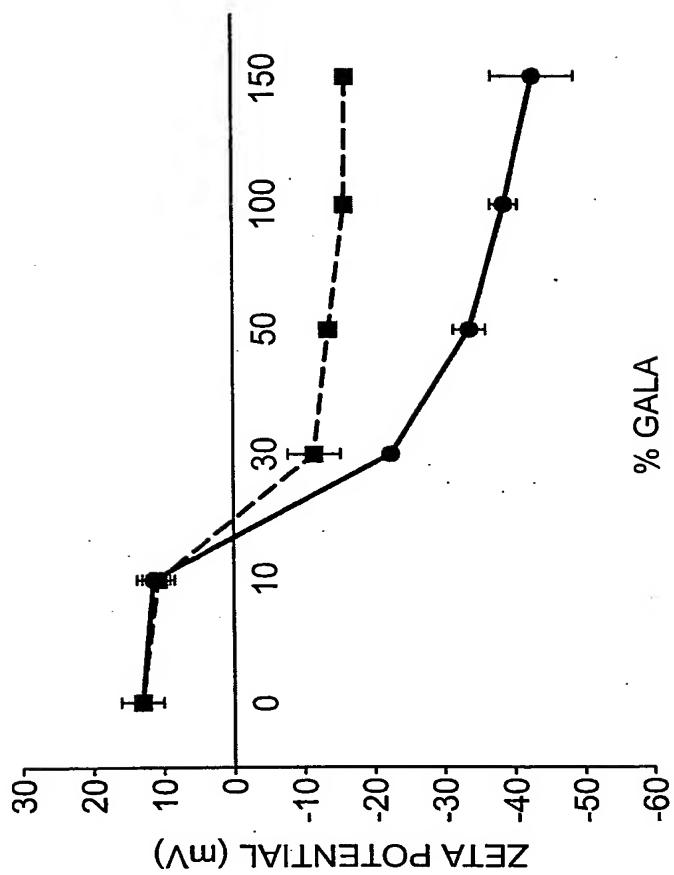
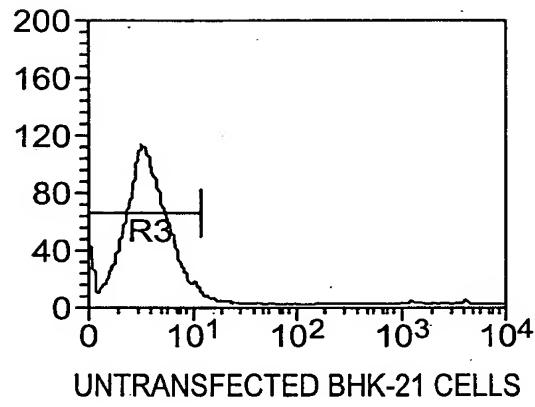
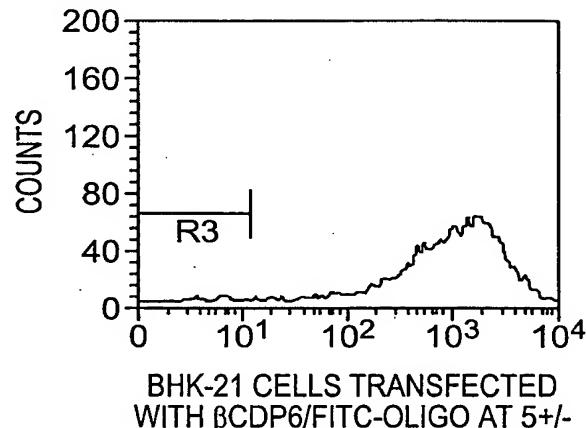
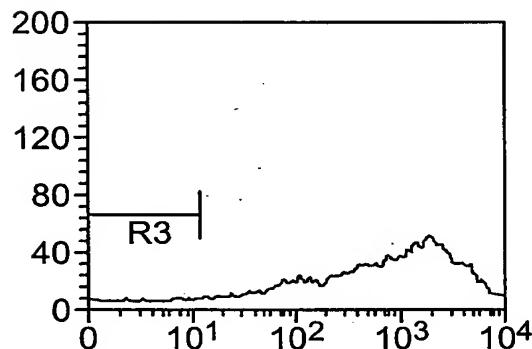
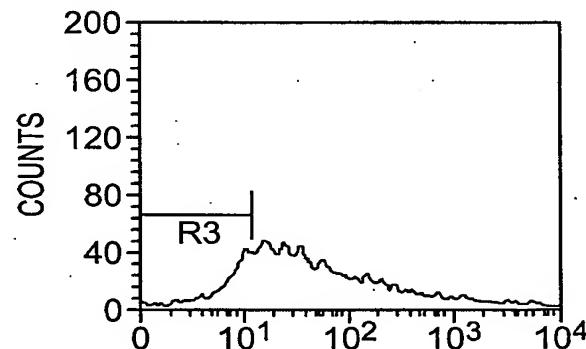


FIG. 3

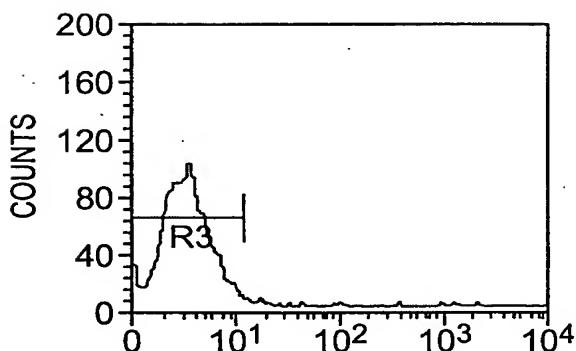
UPTAKE OF GALA-Ad AND GALA MODIFIED
POLYPLEXES BY BHK-21 CELLS.

UNTRANSFECTED BHK-21 CELLS

FIG. 4ABHK-21 CELLS TRANSFECTED
WITH β CDP6/FITC-OLIGO AT 5 \pm **FIG. 4B**BHK-21 CELLS TRANSFECTED
WITH β CDP6/FITC-OLIGO/50 % GALA**FIG. 4C**BHK-21 CELLS TRANSFECTED
WITH β CDP6/FITC-OLIGO/50 % GALA-AD**FIG. 4D****FIG. 4**

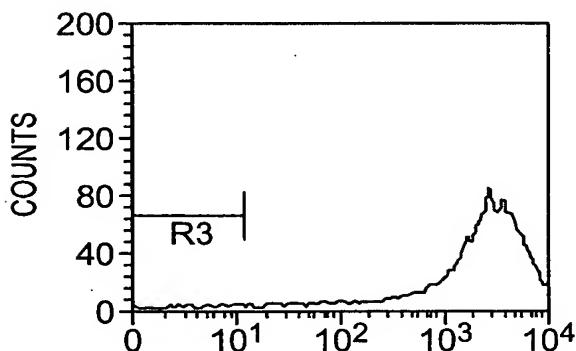
5/31

UPTAKE OF GALA-Ad AND GALA MODIFIED
POLYPLEXES BY HUH-7 CELLS



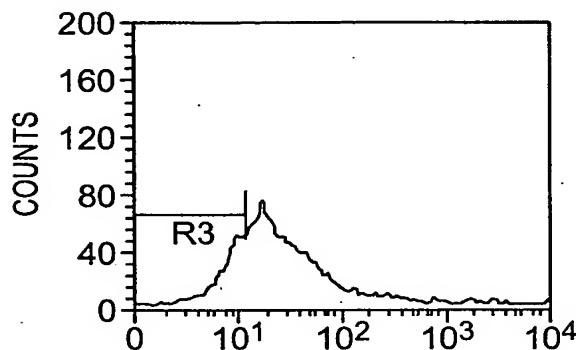
UNTRANSFECTED HUH-7 CELLS

FIG. 5A



HUH-7 TRANSFECTED WITH
 β CDP6/FITC-OLIGO AT 5+/-

FIG. 5B



HUH-7 TRANSFECTED WITH
 β CDP6/FITC-OLIGO/ 50 % GALA-Ad

FIG. 5C

FIG. 5

LUCIFERASE TRANSFECTION OF BHK-21 CELLS WITH β CDP-BASED POLYPLEXES
MODIFIED WITH GALA (SHADED BARS) AND GALA-Ad (WHITE BARS).

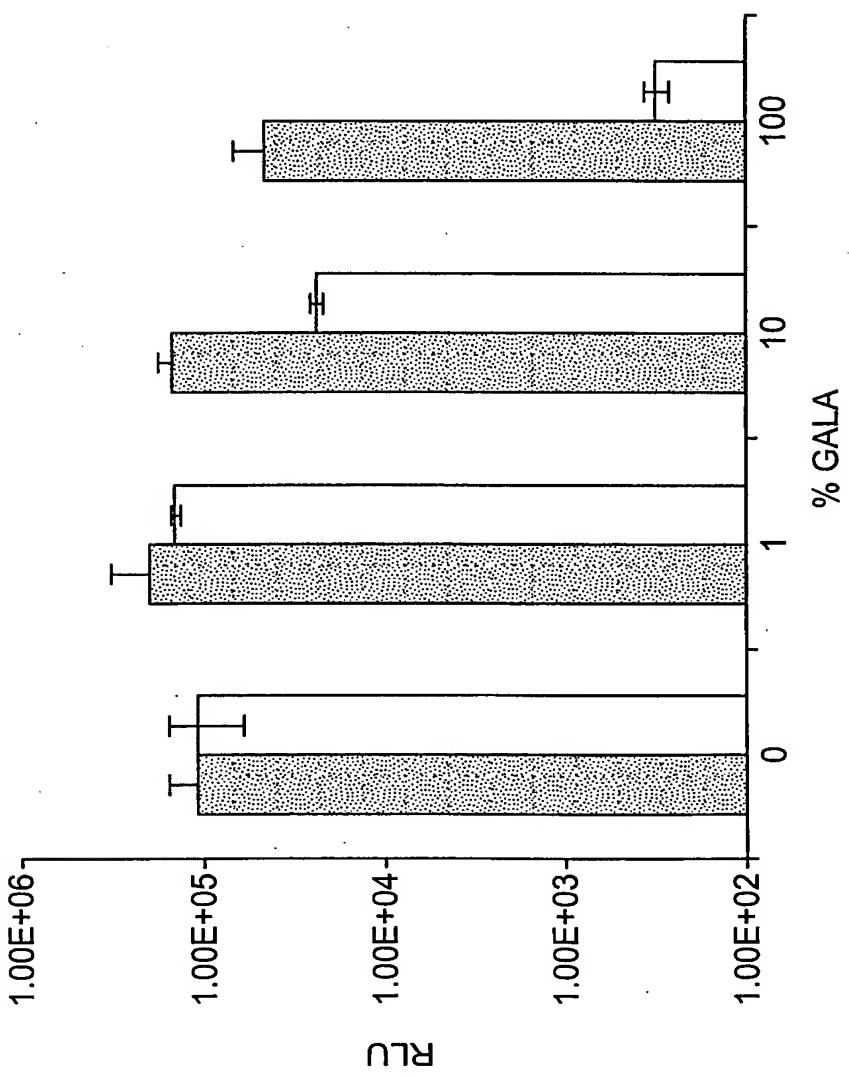


FIG. 6

7/31

TOXICITY OF GALA AND GALA-Ad MODIFIED POLYPLEXES TO BHK-21 CELLS.

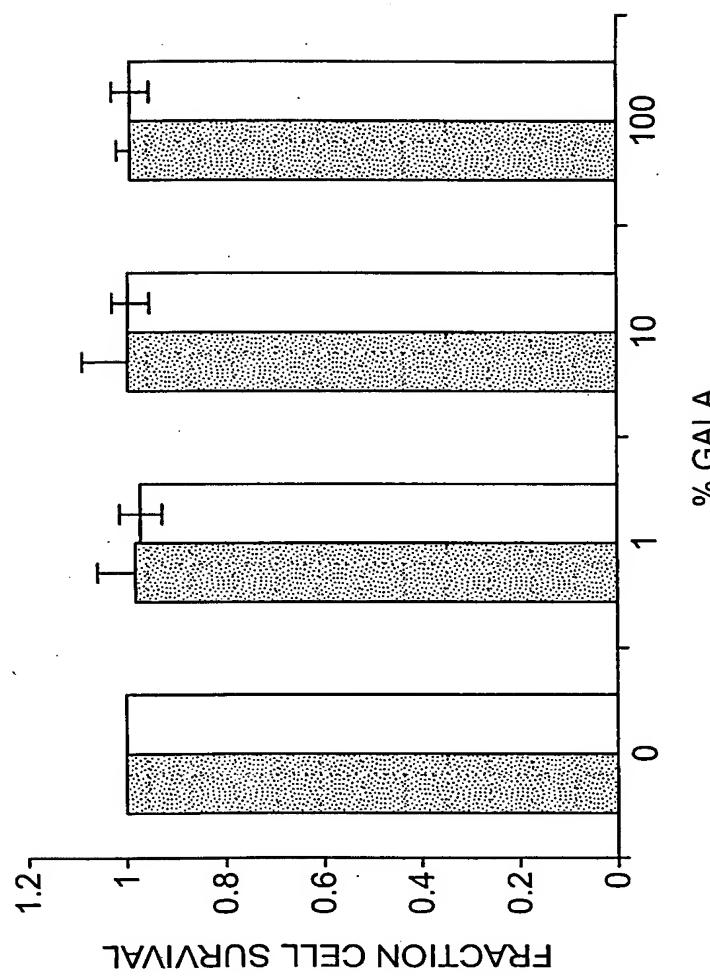
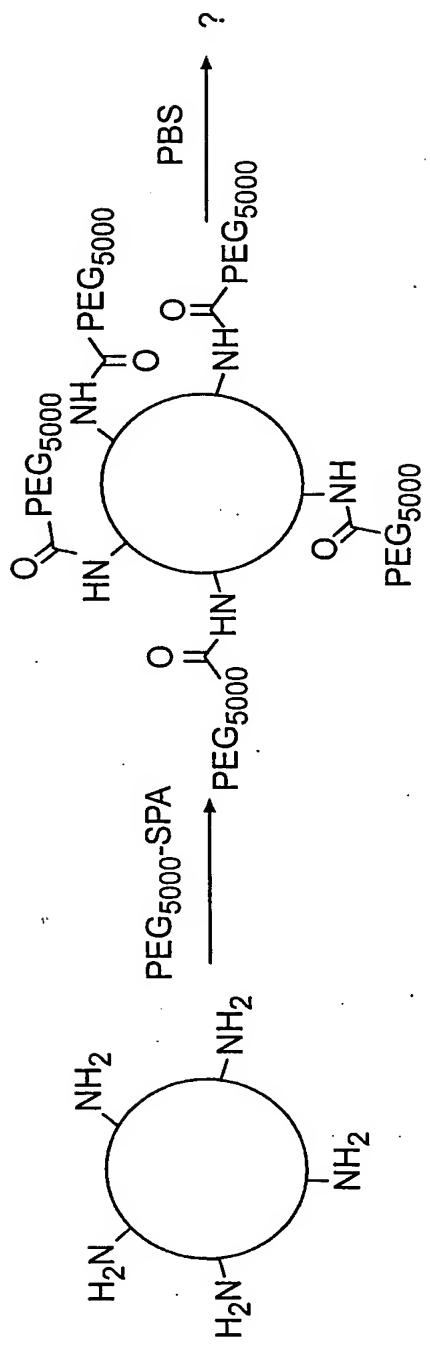


FIG. 7

SCHEME FOR POST-DNA-COMPLEXATION PEGYLATION BY GRAFTING.



STAGE 1

FIG. 8

9/31

PARTICLE SIZES OF PEI AND 12 (β CDP6) POLYPLEXES DURING
POST-DNA-COMPLEXATION PEGYLATION OF GRAFTING.

POLYPLEX	PEG	STAGE 1 (nm)	STAGE 2 (nm)	STAGE 3 (nm)
PEI 3+/-	10:1	58	65	115
PEI 6+/-	10:1	55	60	78
β CDP6 5+/-	100%	70	67.4	303
β CDP6 5+/-	150%	70	X*	N/A
β CDP6 5+/-	200%	70	X*	N/A
β CDP6 5+/-	100% PEG**	67	81	700

*POOR CORRELATION FUNCTION; NO SIZE MEASUREMENTS POSSIBLE.

**PEG₅₀₀₀ ADDED INSTEAD OF PEG₅₀₀₀-SPA

FIG. 9

SALT STABILIZATION OF POLYPLEXES BY PEGYLATION.

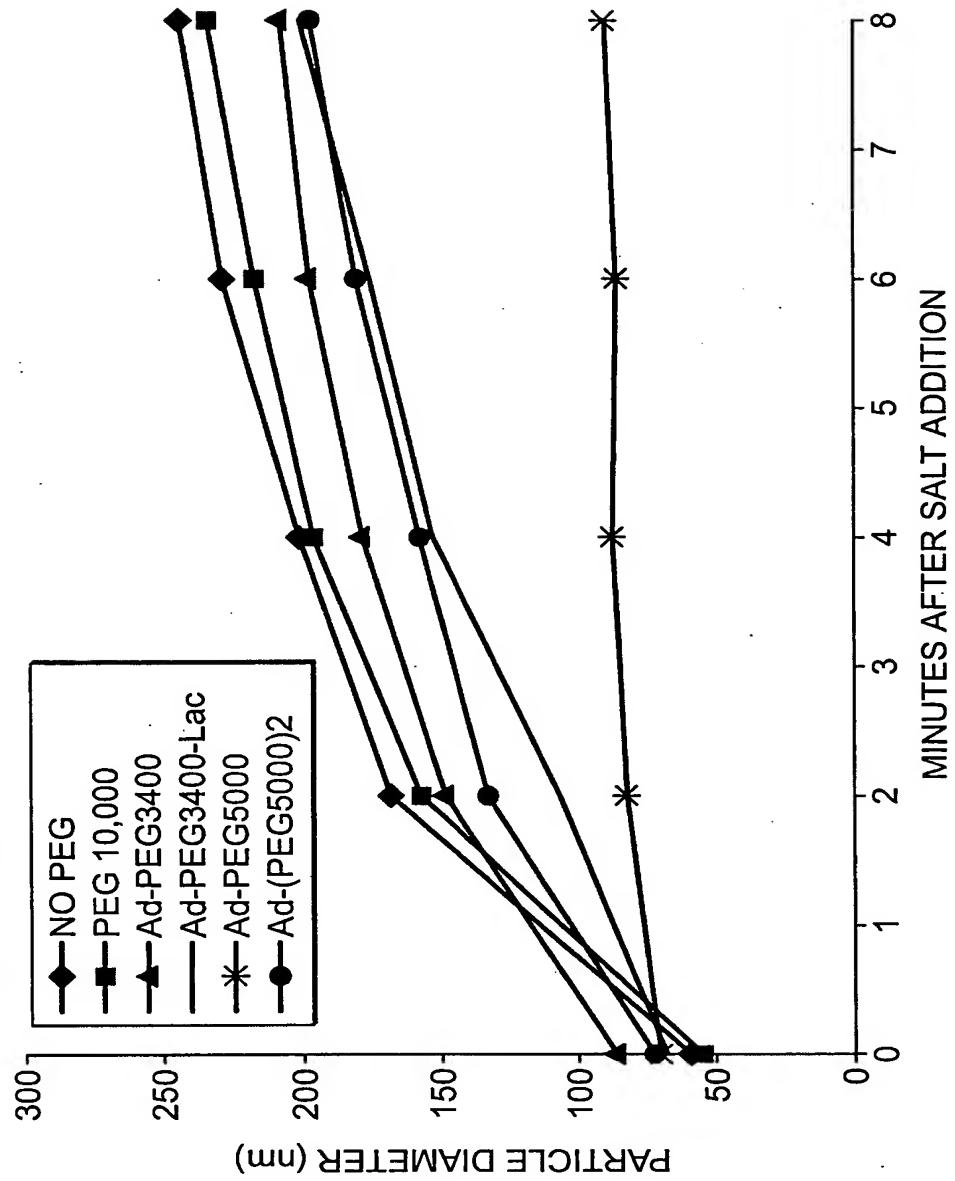


FIG. 10

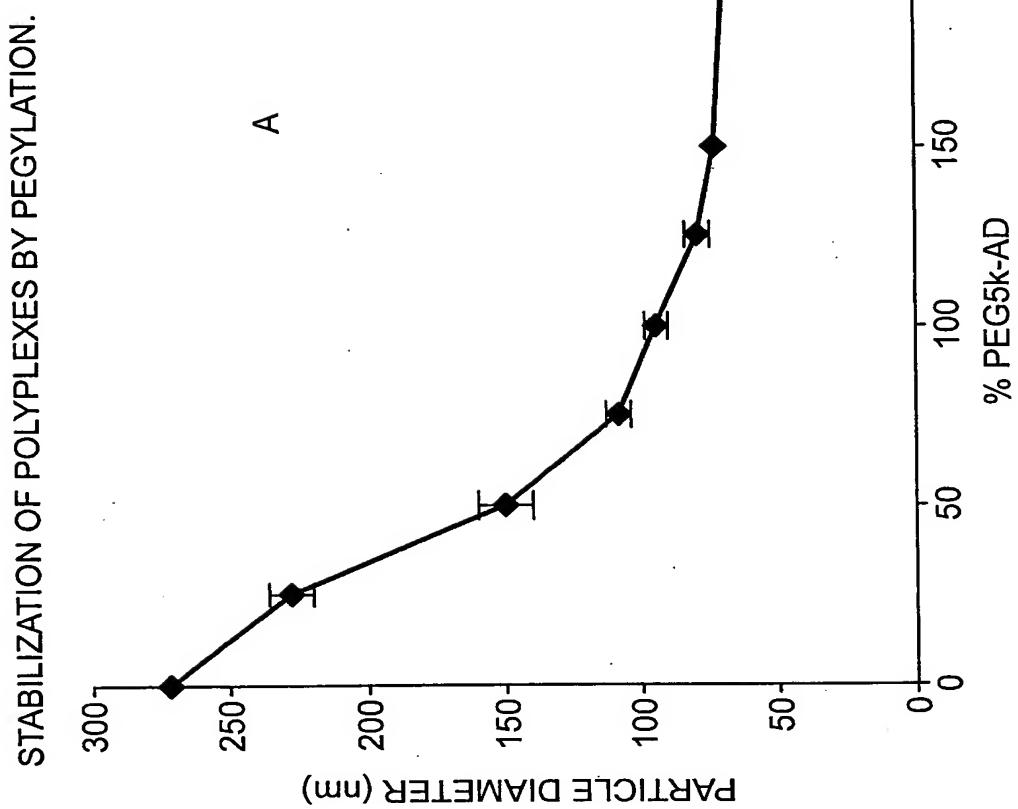
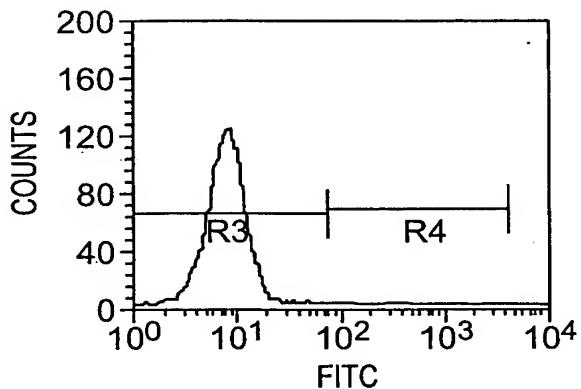


FIG. 10A

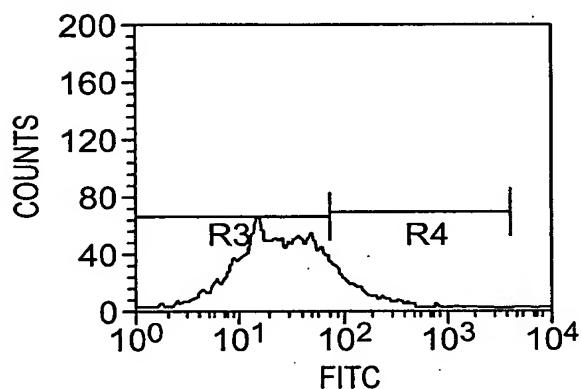
12/31

CO-DELIVERY OF β CDP6 POLYPLEXES WITH PEG₃₄₀₀-FITC.



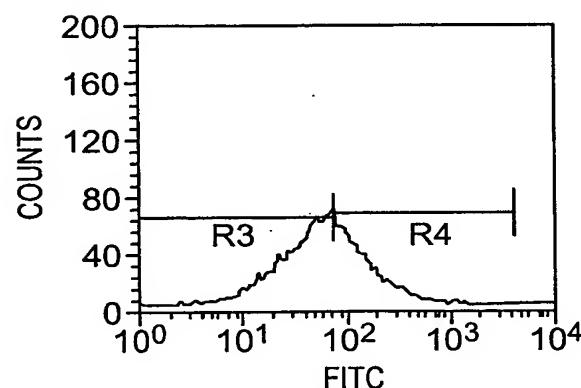
UNTRANSFECTED HUH-7

FIG. 11A



HUH-7 TRANSFECTED WITH
 β CDP6/OLIGO + FREE PEG₃₄₀₀-FITC

FIG. 11B



HUH-7 TRANSFECTED WITH
 β CDP6/OLIGO/Ad-PEG₃₄₀₀-FITC

FIG. 11C

FIG. 11

13/31

STRUCTURE OF LACTOSE-CDP6

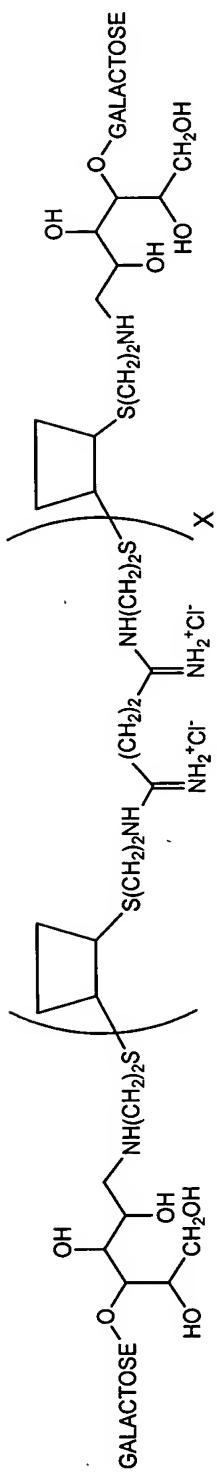


FIG. 12

TRANSFECTION OF β CDP (DASHED LINE) AND Lac-CDP6
(SOLID LINE) POLYPLEXES TO HUH-7 CELLS.

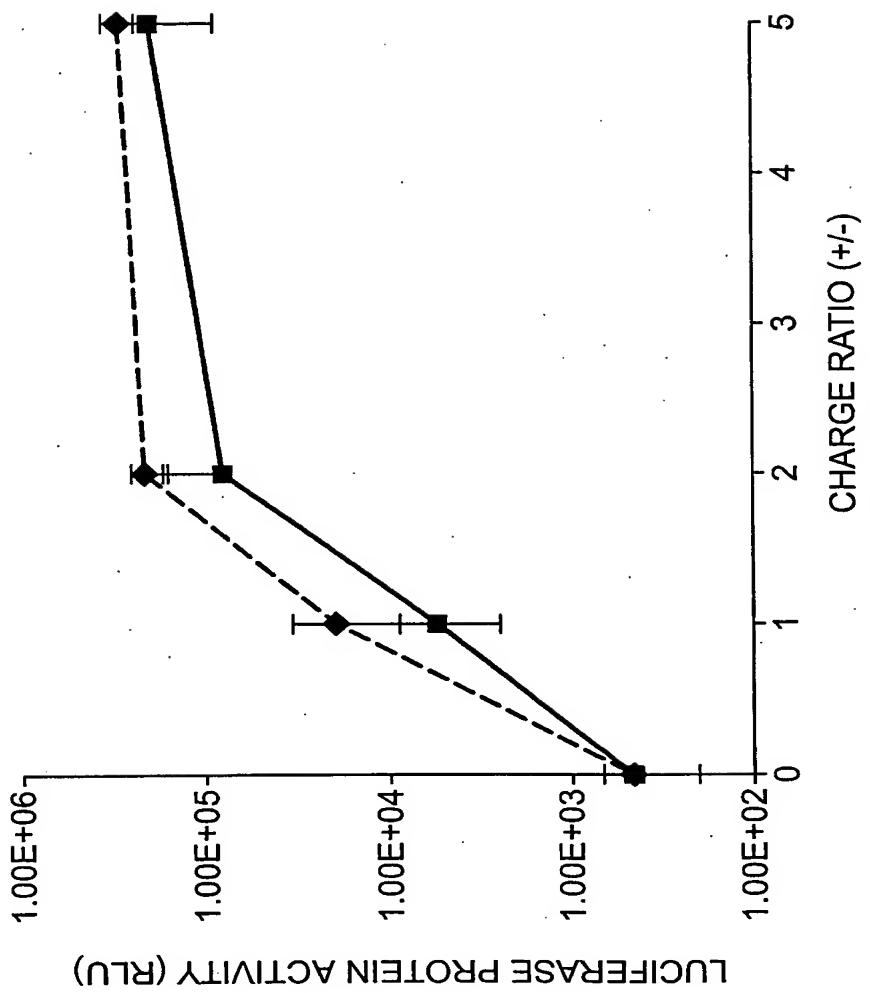


FIG. 13

SCHEMATIC OF EXPERIMENTAL PROTOCOL, EXAMPLE 47

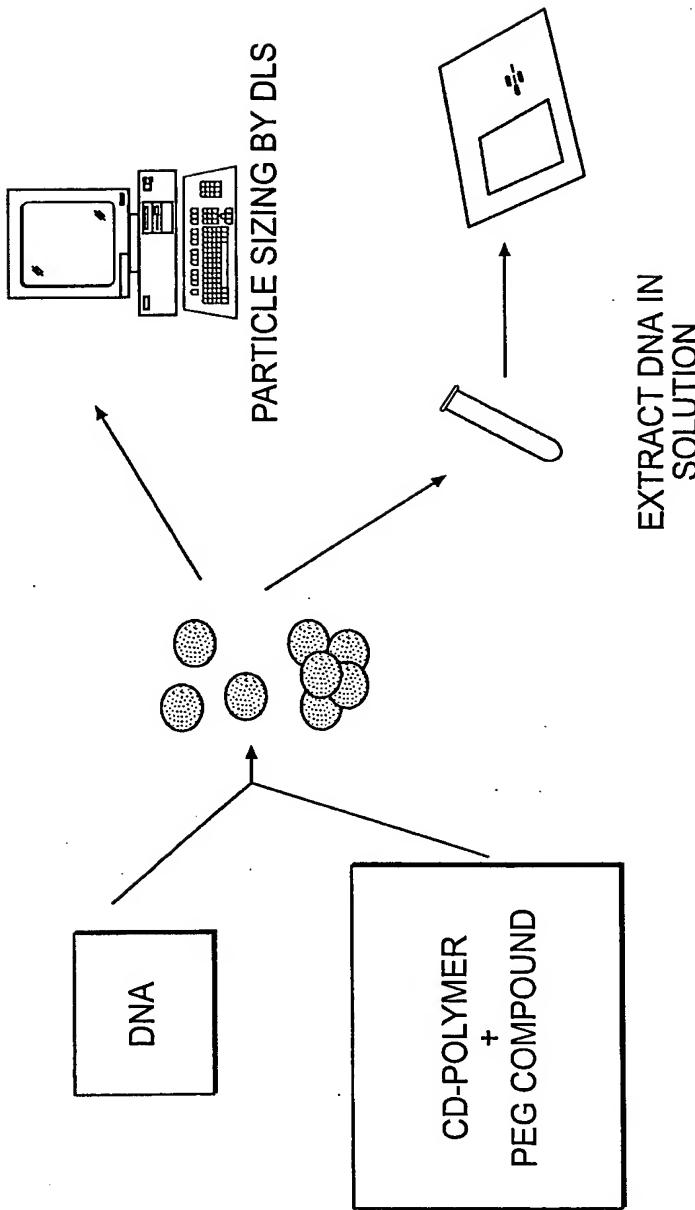


FIG. 14

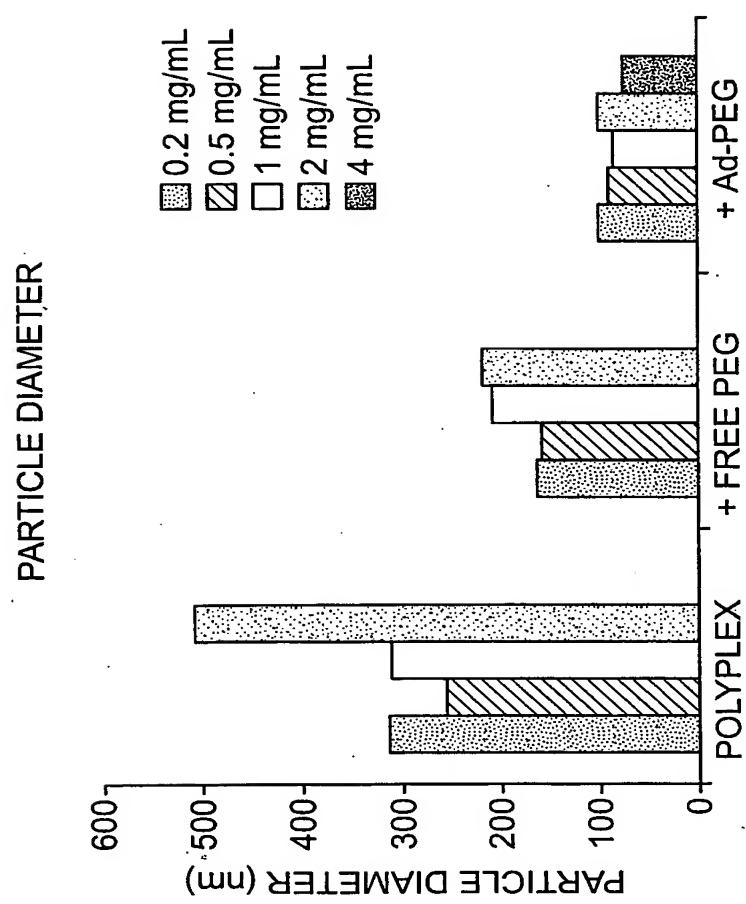


FIG. 15

DNA LOSS DUE TO COMPLEX PRECIPITATION

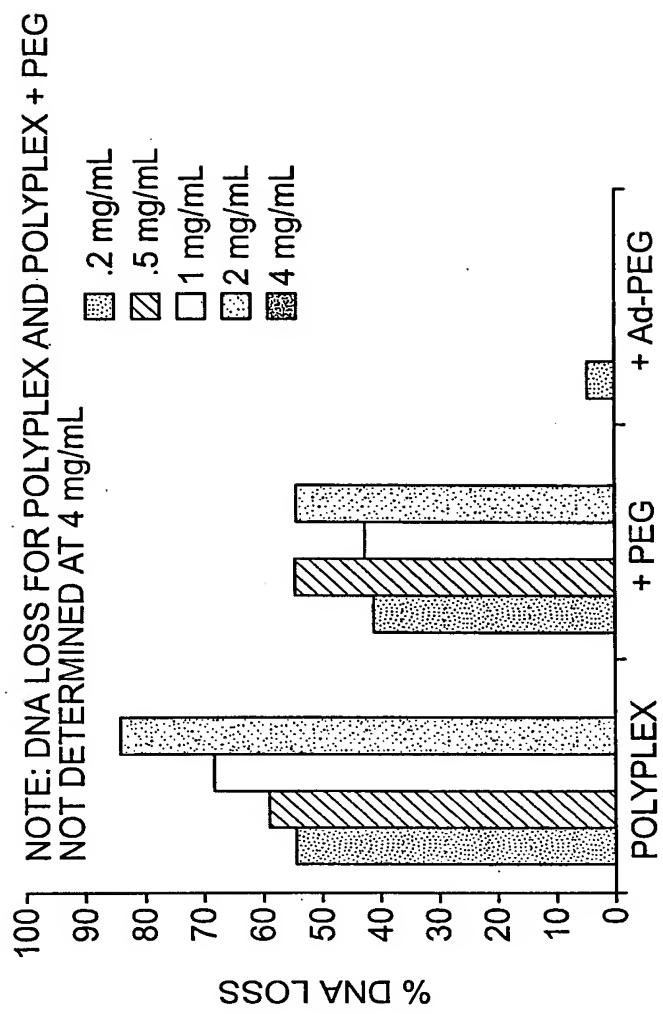


FIG. 16

INCLUSION COMPLEXES TO MODIFY 12/DNA COMPOSITE

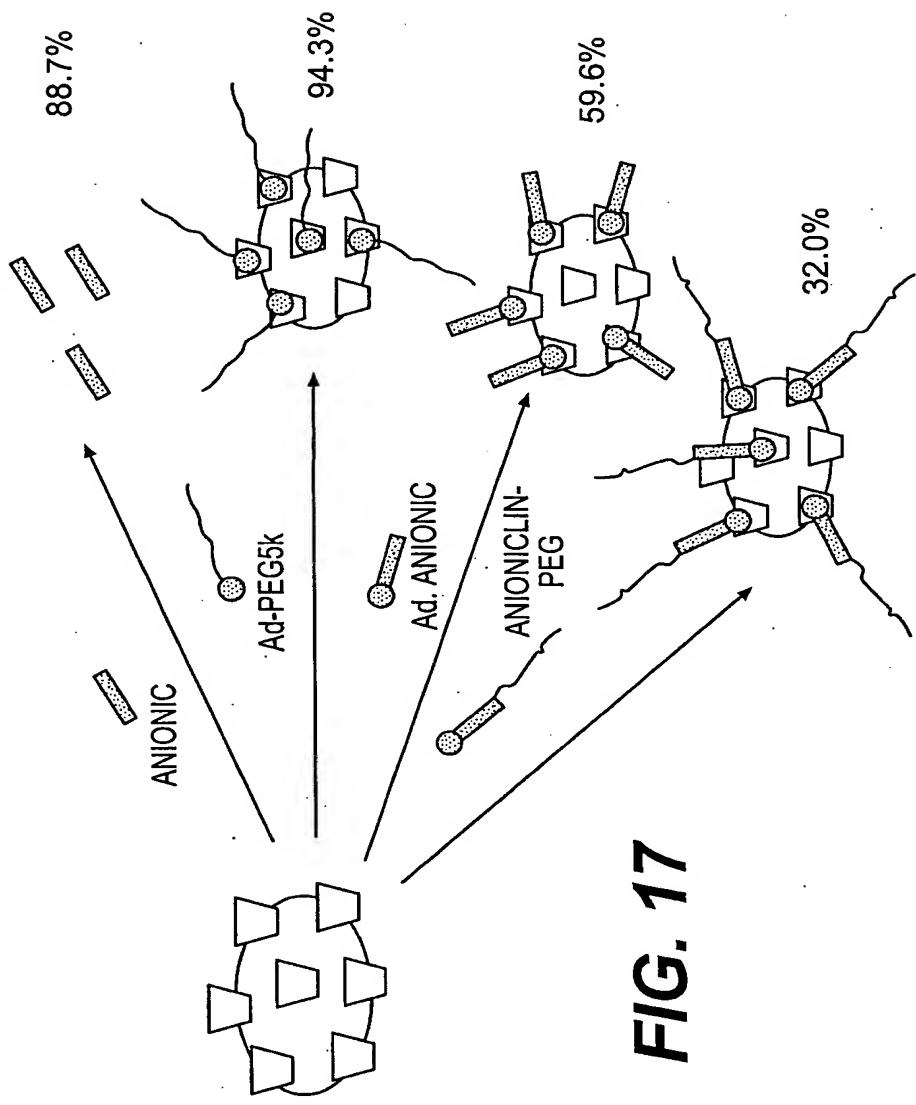
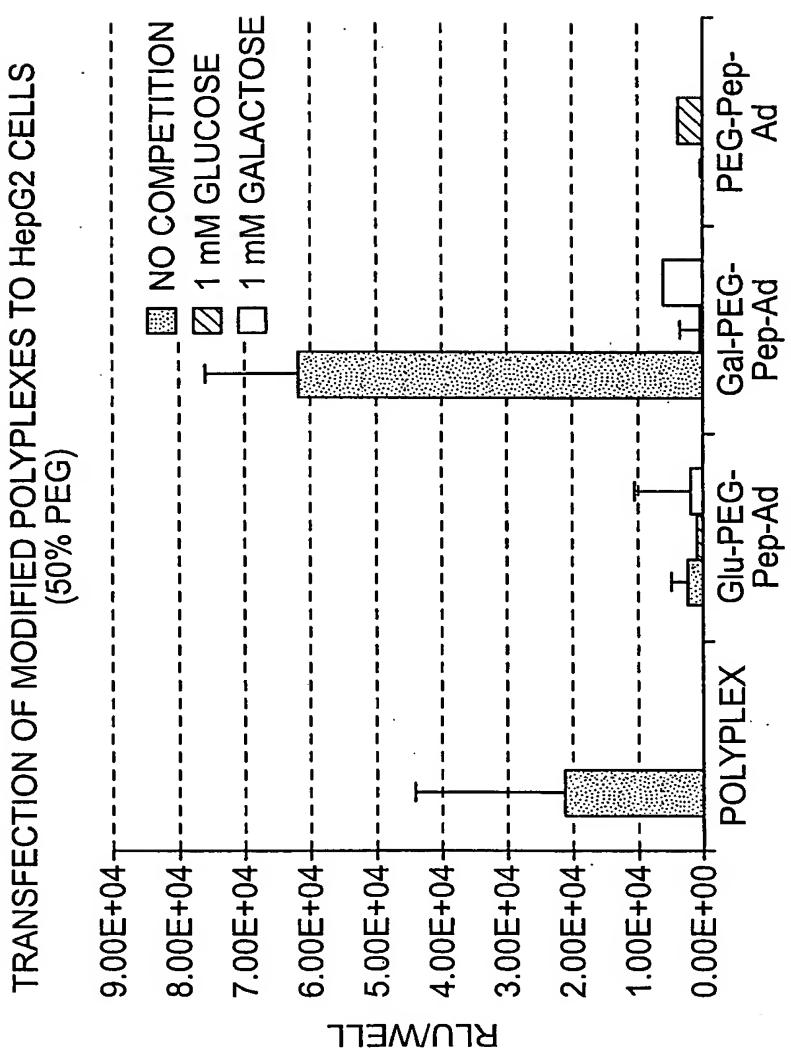
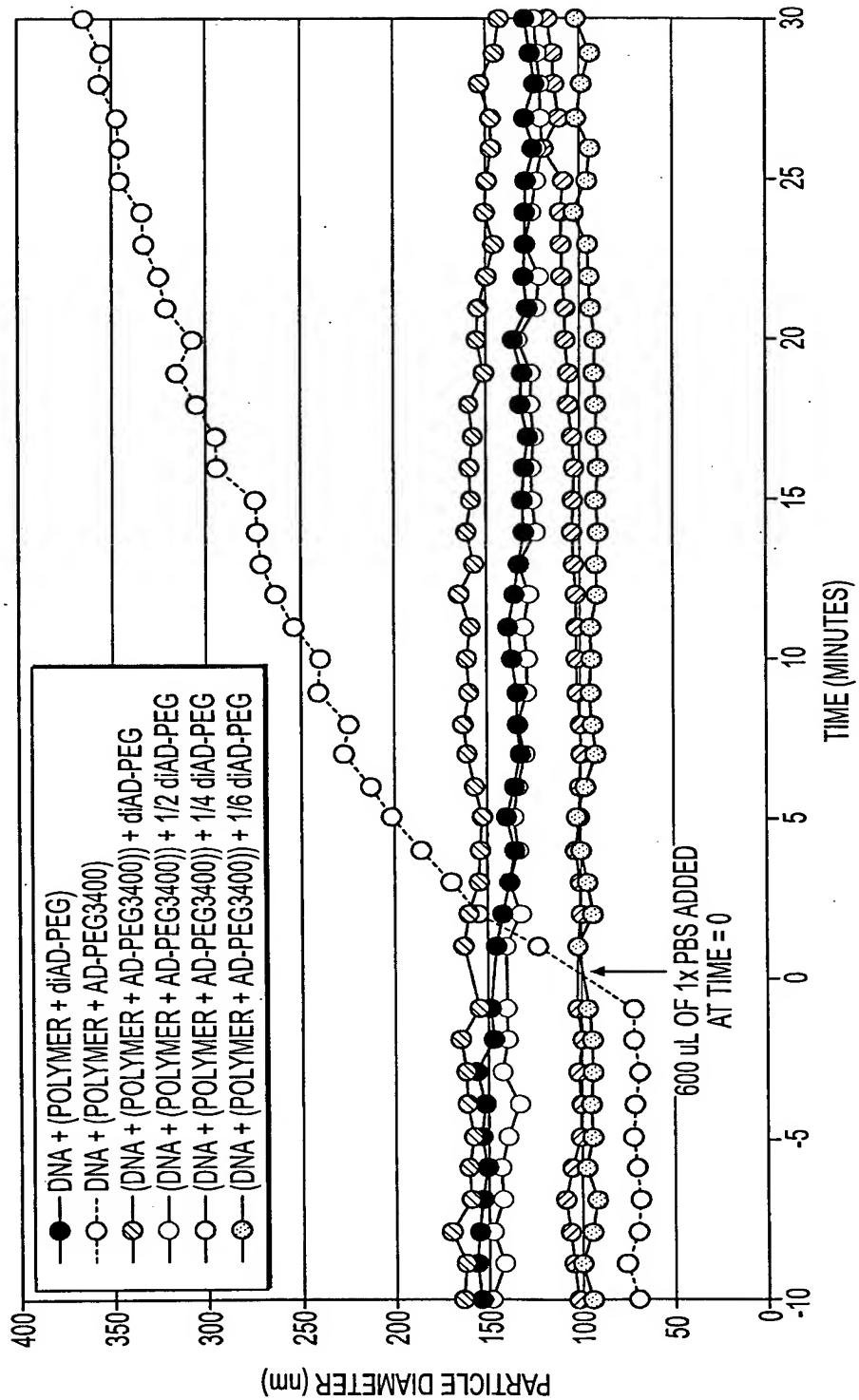


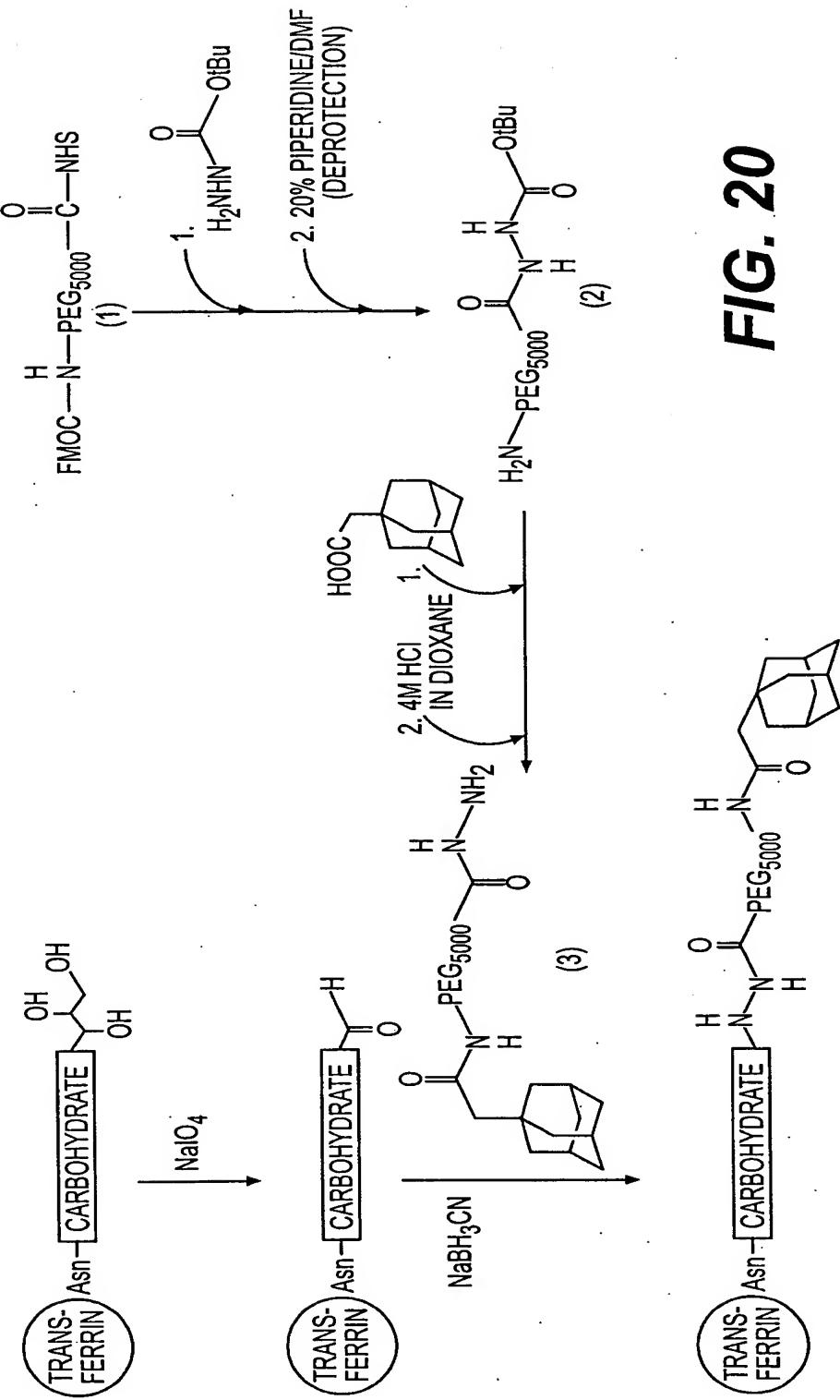
FIG. 17

**FIG. 18**

COMPETITIVE DISPLACEMENT EXPERIMENTS

**FIG. 19**

SYNTHESIS OF ADAMANTANE-PEG-TRANSFERRIN (Ad-PEG-Tf)

**FIG. 20**

22/31

IRON LOADING OF TRANSFERRIN

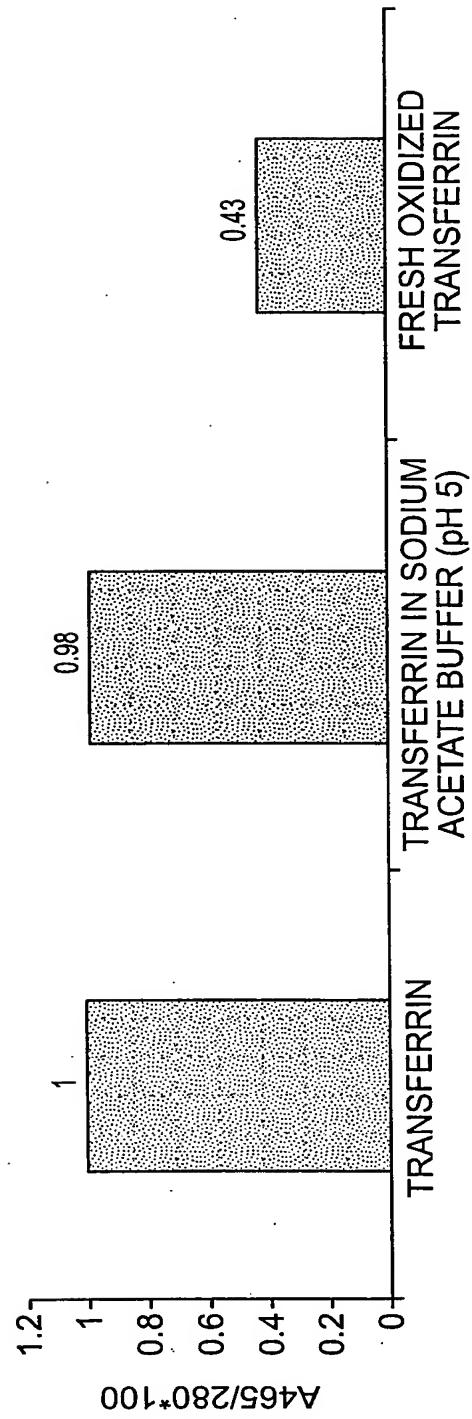


FIG. 21

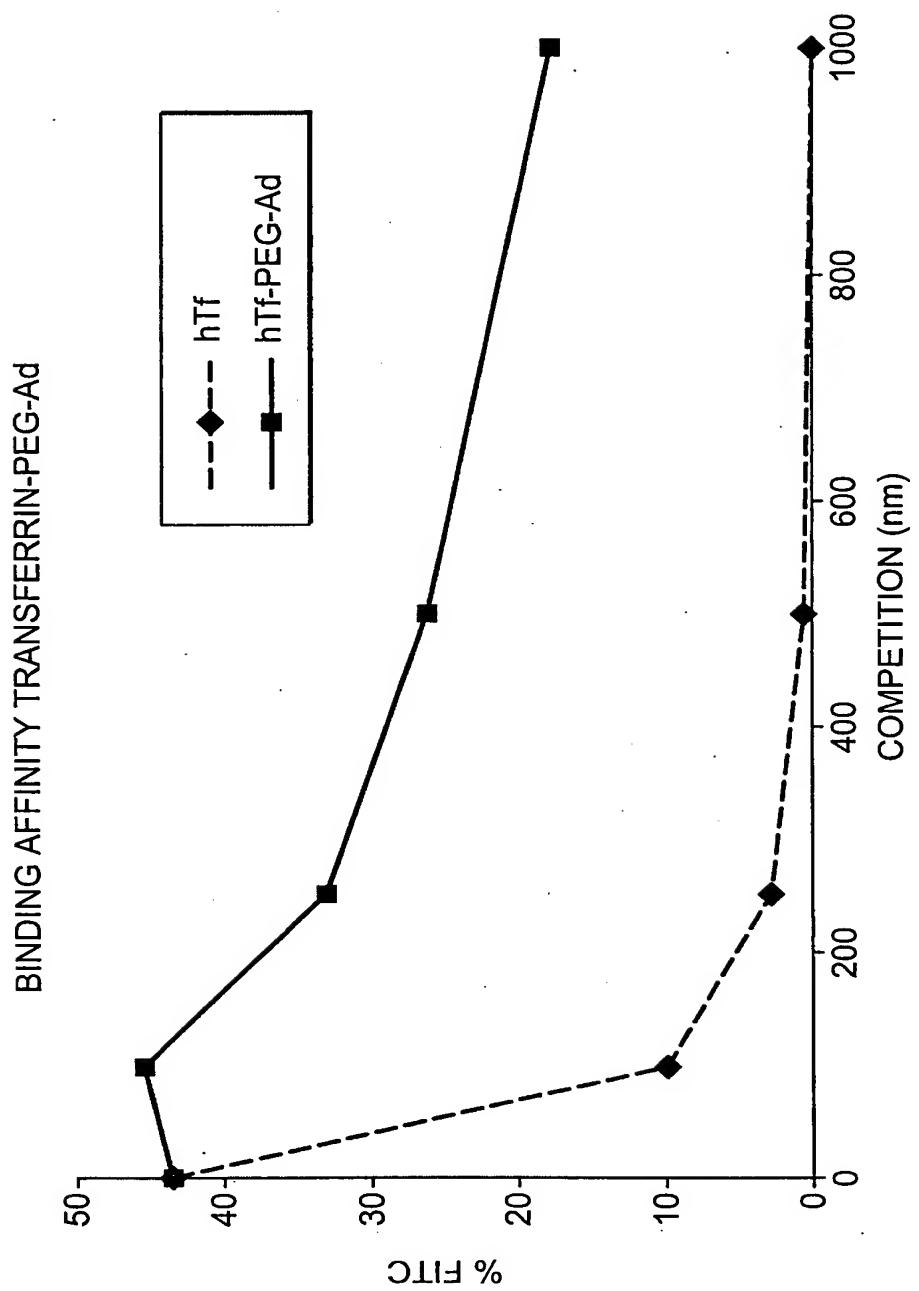


FIG. 22

24/31

TRANSFERRIN COUPLING VIA LYSINE GROUPS

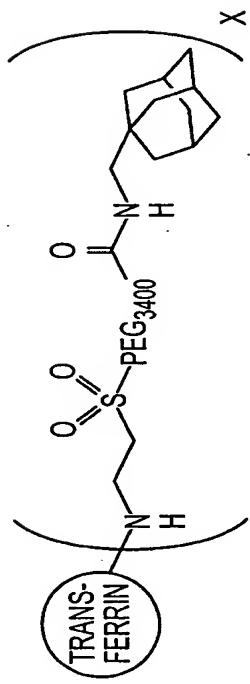
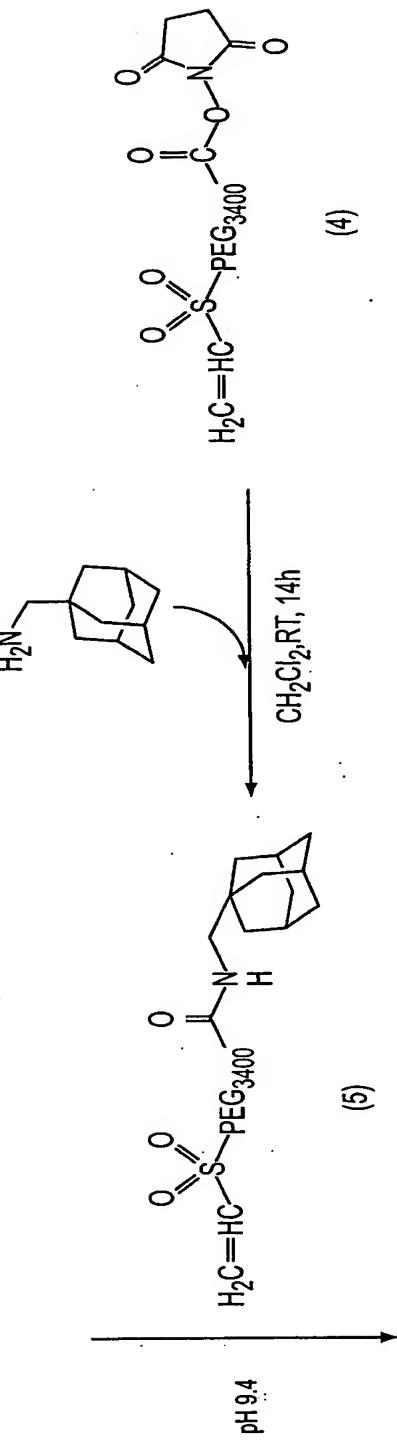
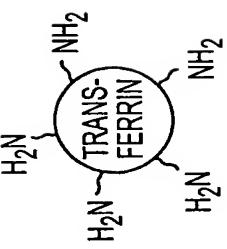


FIG. 23

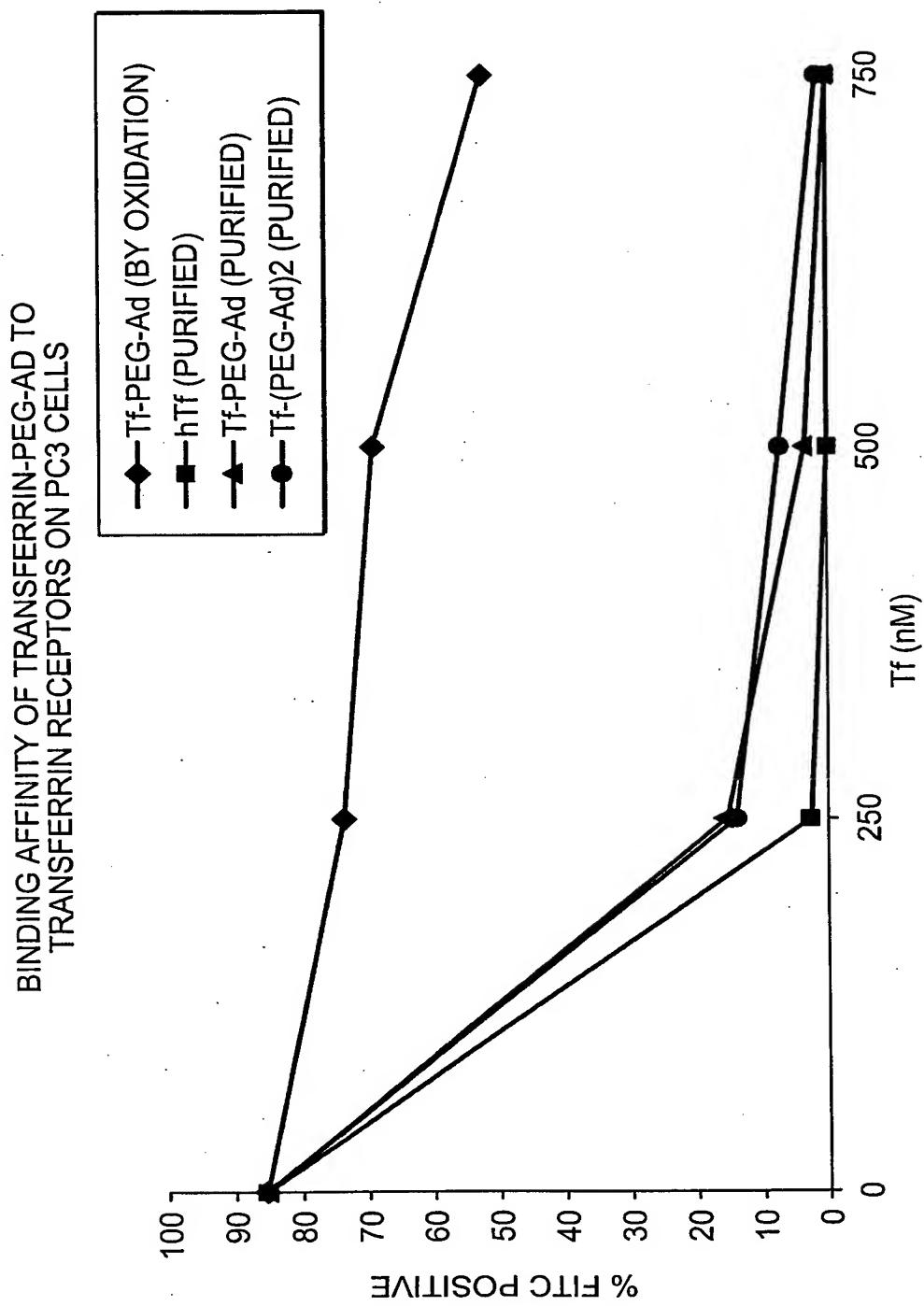


FIG. 24

ZETA POTENTIAL VARIATION AND PARTICLE SIZE AS A FUNCTION OF PARTICLE
MODIFICATION IN TRANSFERRIN AND PEG-MODIFIED POLYPLEXES

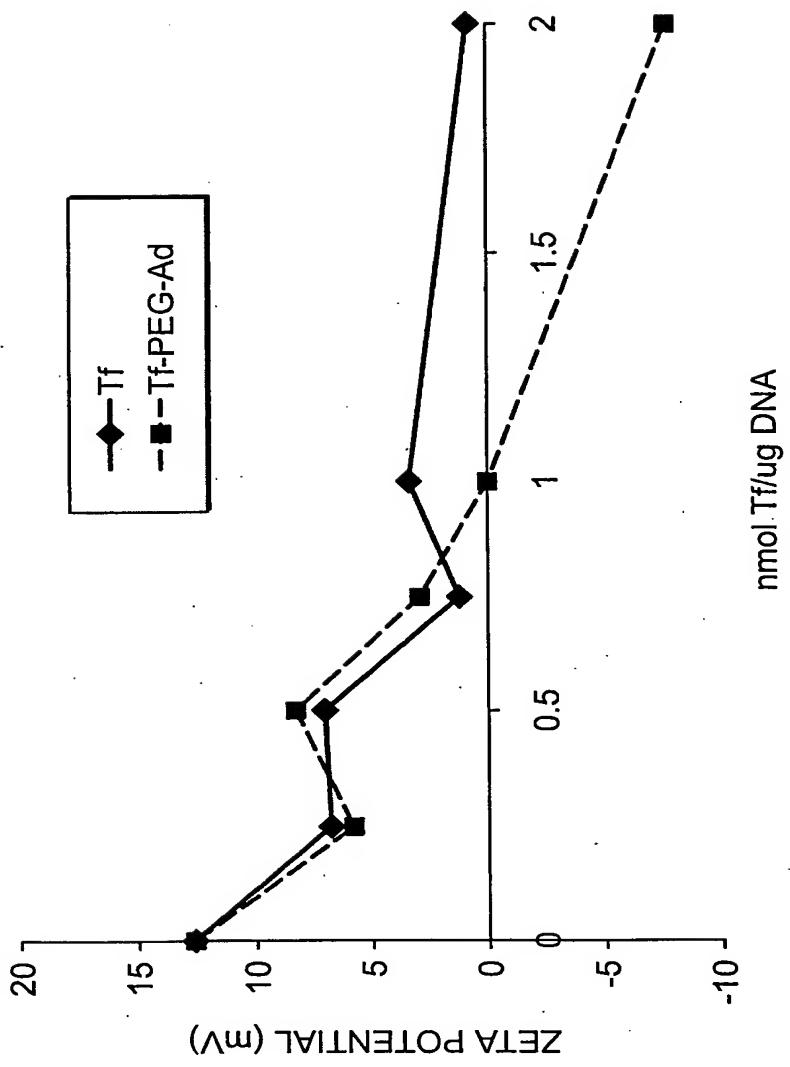
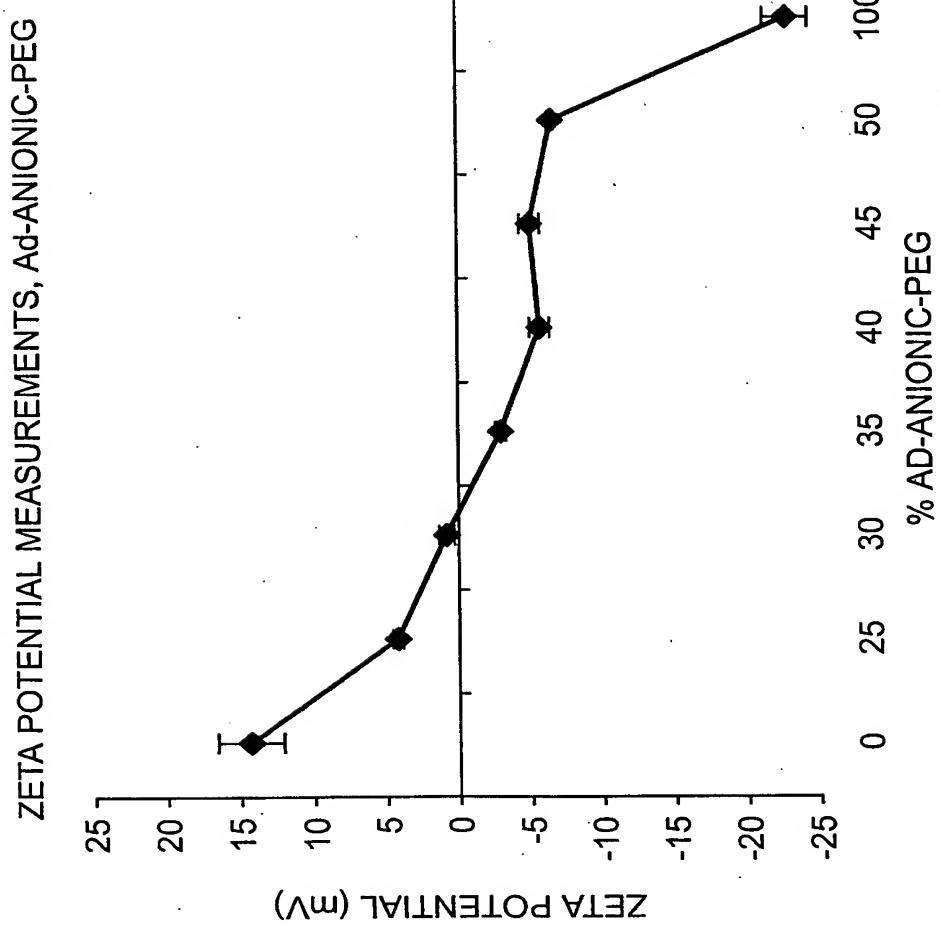


FIG. 25

**FIG. 26**

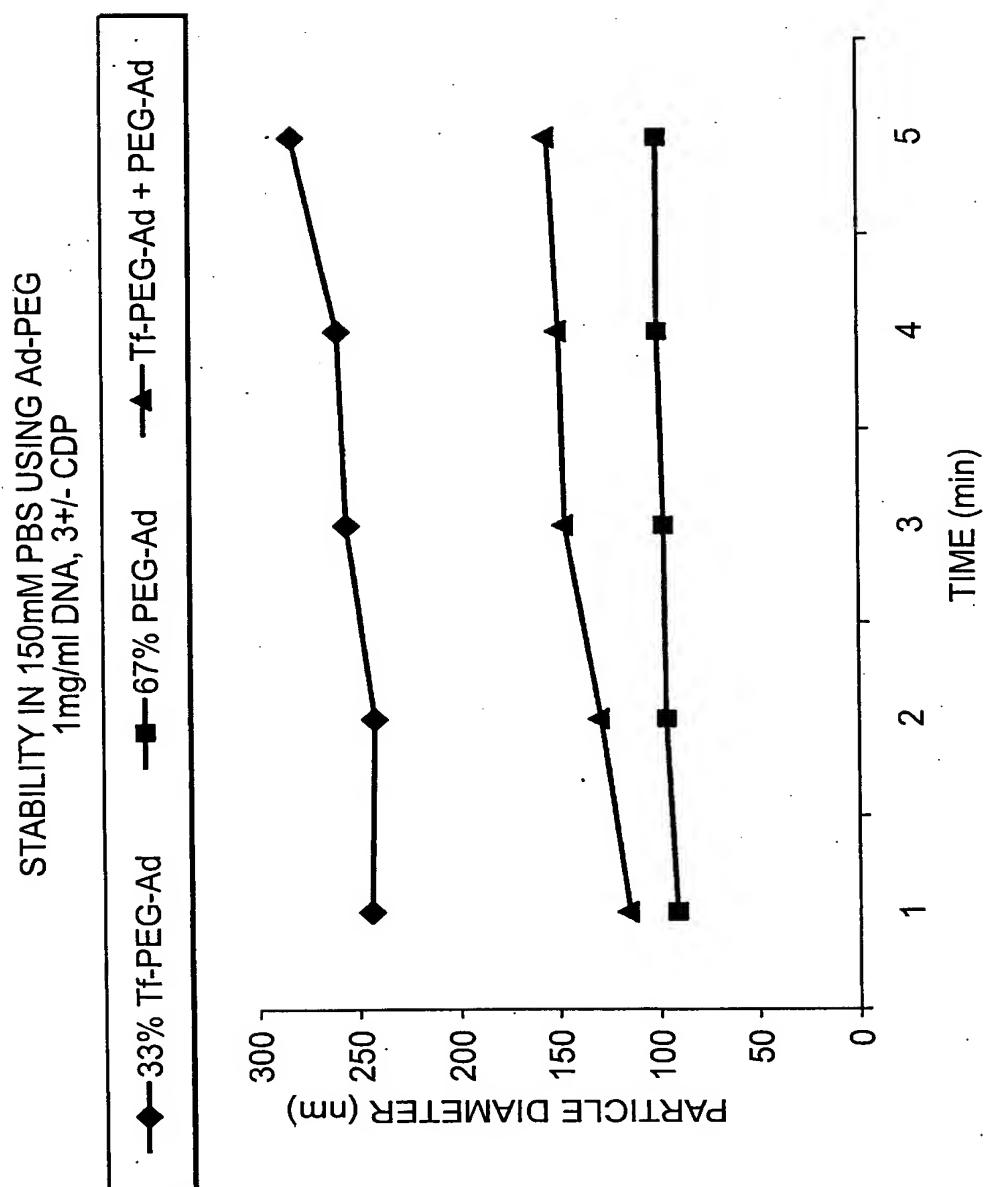


FIG. 27

ADDITION OF INCREASING Tf-MODIFIER (BALANCE IS AD-PEG)
1 mg/mL DNA, 3+/- CDP

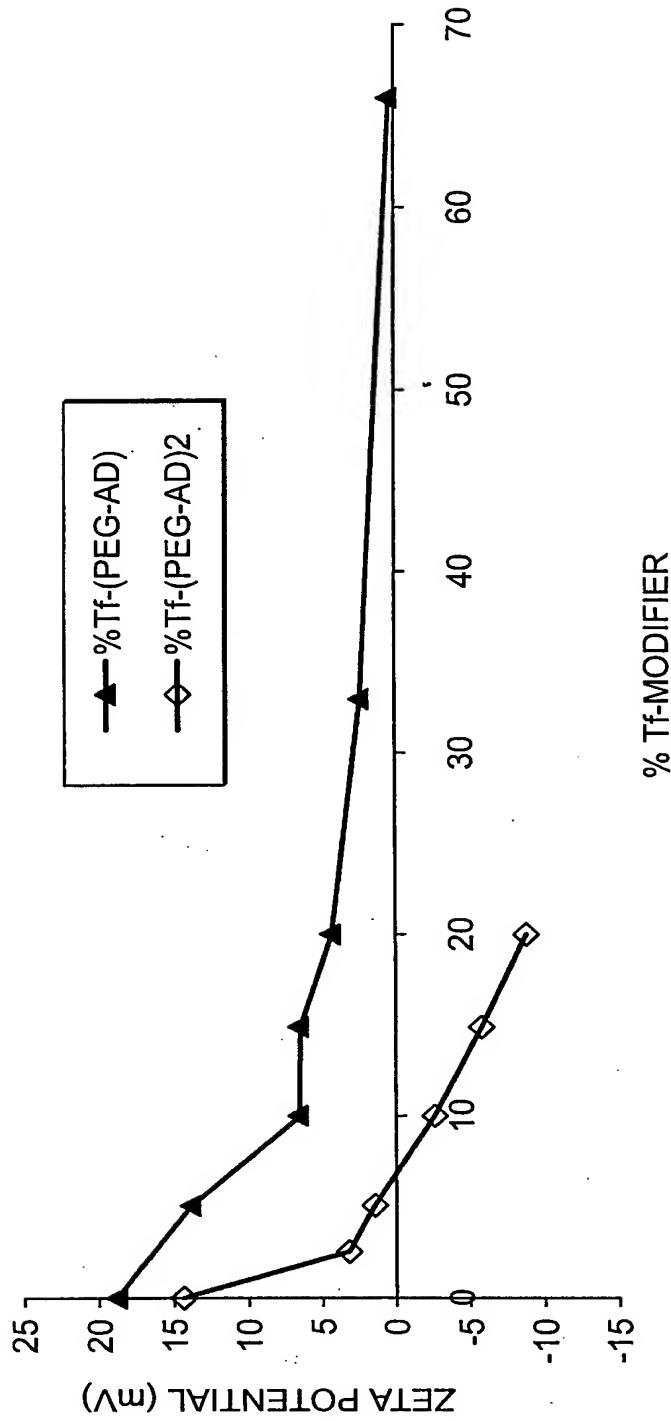
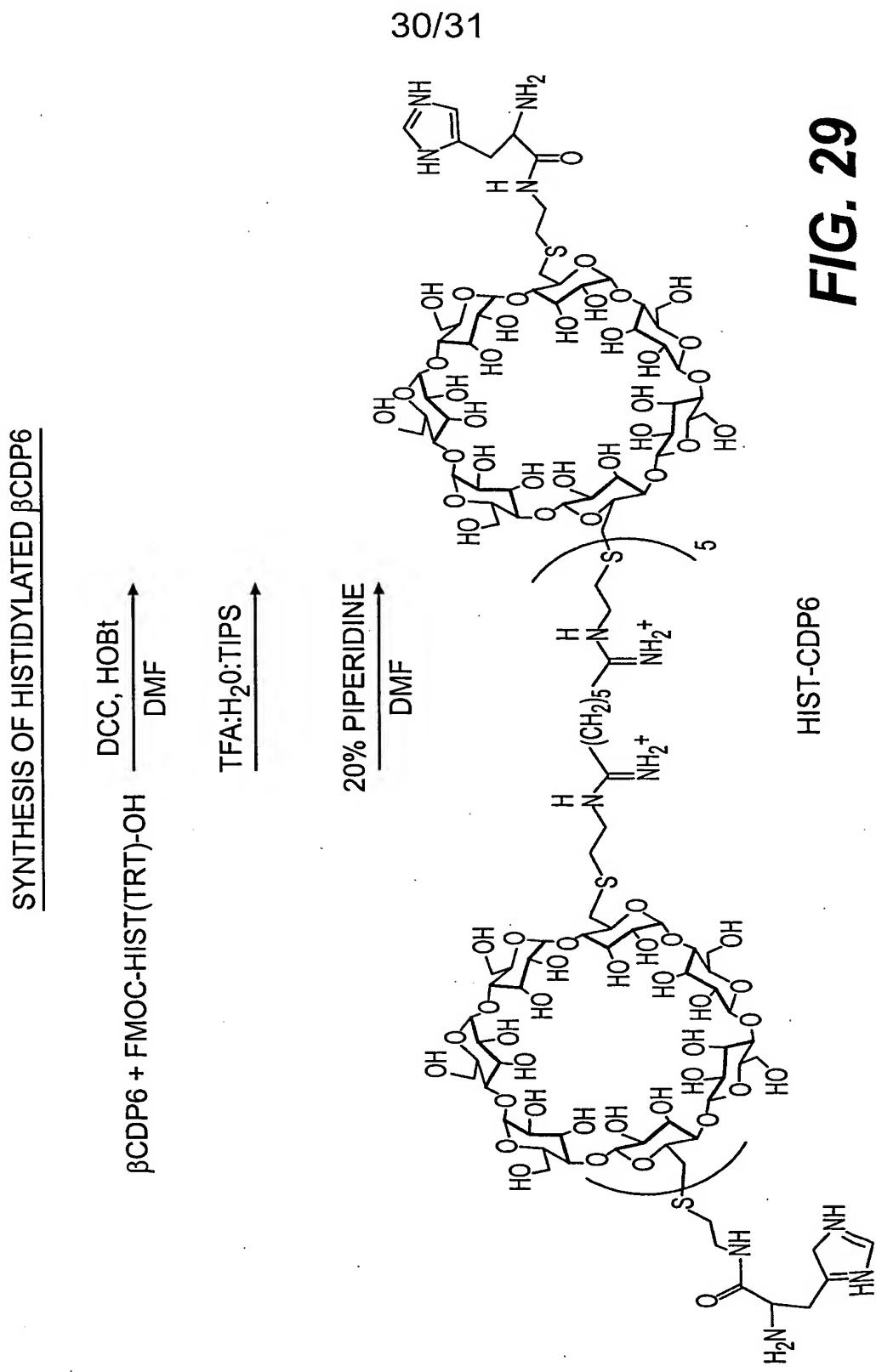


FIG. 28

FIG. 29



pH-SENSITIVE POLYMERS FOR ENDOSOMAL ESCAPE
SYNTHESIS OF SECONDARY AMINE CONTAINING POLYMERS

31/31

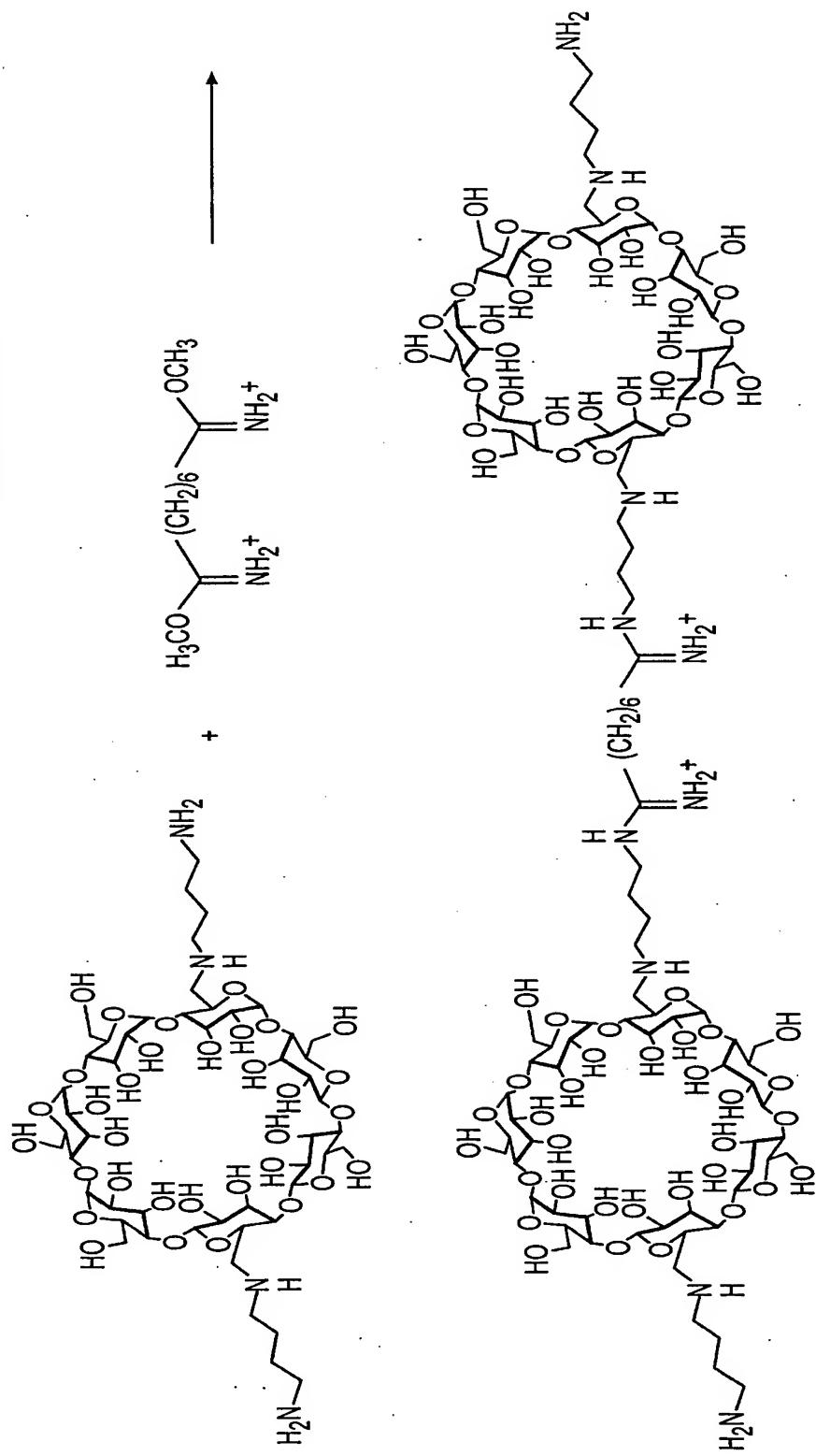


FIG. 30